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Type I PROGRESS REPORT

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EVALUATION OF LANDSAT-2 DATA

FOR

SELECTED HYDROLOGIC APPLICATIONS

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Landsat-2 Investigation No. 23170

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Landsat-2 Investigation No. 23170

A. Problems

1. A type III Draft Report is not possible at this time. We are still analyzing aircraft data and Landsat data that were delayed or incorrectly processed. (see Type II Progress Report dated 9/15/76 and prior progress reports) We respectfully request a delay of at least 3 months (1 July 1977) to prepare a draft copy of our final report.

2. The M²S DMD imagery for the October 17, 1975 overflight at Luverne, Minn. was about 1 mile west of the test site line. After consulting with the SSC Operations Planning and Requirements Office (OPRO), it was decided that we had seen an incorrect pass. A new tape is being generated for the proper pass and we expect it soon.

B. Accomplishments

1. Development of suitable computer programs for processing Landsat CCT's. The programs currently used are: 1) an imaging program which makes a picture and 2) a microfilm-making program which displays the data as contoured arrays of 32 spots by 32 lines. Both types display the data as square (distance in x and y directions are equal). The imaging programs display two pictures side by side on an image which is 10 inches wide and can be made up to 10 inches long depending upon the number of scan lines processed. It would take the length of two such images to be equivalent to the lines on a computer compatible tape. The allowed selections of displays are: 1) any two of MSS bands 4, 5, 6 or 7 from any one of four computer compatible tapes; 2) any one MSS band and a four-band summation; 3) the difference of and the ratio of any two MSS bands; and 4) the sum of all four bands and the difference of any MSS bands from that

sum (sum of the remaining 3). The microfilm program creates 35mm images of contoured 32 by 32 arrays and has 3 options: (1) any of MSS bands 4, 5, 6 or 7; (2) a summation of those four bands; and (3) a difference of any two MSS bands.

2. Generated M²S contoured microfilm full resolution printout of Luverne test site for October 17, 1975 from CCT's for channel 11 (8-13 μ m) of the entire test site line. With the help of IR color air photos on unvegetated plowed bare field was selected for specific study. Contoured printouts for channels 1-10 were also generated. Histograms and average count values were calculated except for channels 5 and 8 which were not used on the flight. An algorithm to convert count values to reflectance values is in preparation by OPRO in Houston, and an algorithm to convert thermal counts to temperature values is now being run for the first time.

3. Base maps for Luverne, Cranberry Lake and American River Test sites are complete.

4. Rectified Landsat microfilm printouts were prepared and assembled at 1:24,000 scale for the American River basin subbasins. Data from band 7 now being collated for corresponding ground truth sites for comparison with albedo and density ground truth.

C. Significant results: None

D. Publications: None

E. Recommendations: None

- G. Data used: CCT;s of Landsat data and 70mm images.
- H. Aircraft data: M²S multiband imagery and CCT's color IR photos, ektachrome color photos.

